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AUTHOR Stallings, Jane A.
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ABSTRACT

A total of 905 students and 51 teachers were involved in a two-phase study of the teaching of basic reading skills in secondary schools. The first phase of the study used an observation instrument, student ratings, a teacher questionnaire, and a reading achievement test to identify teaching processes that are efficient in helping secondary school students learn to read. The results suggested that, to achieve the most in reading, students should spend much of their class time using workbooks and textbooks, that teachers should use positive feedback and should work frequently with a group of students or with the total class, and that social interaction during class time should be limited. Through a series of workshops, the second phase of the study sought to translate these findings into information that could be used by classroom teachers to increase students' reading achievement. Teachers were placed into either an experimental group that was trained immediately according to the phase-one findings or into a control group that received training later. While the complete data from the study have not been thoroughly analyzed, preliminary findings indicate that teachers in the experimental group have reduced the negative behavior in their classrooms, have increased the amount of positive feedback, and have increased the amount of oral reading with low-reading-ability students. (FL)

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TEACHING BASIC READING SKILLS IN SECONDARY SCHOOLS

Jane A. Stallings, Ph.D.

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SRI International

333 Ravenswood Ave. • Menlo Park, California 94025
(415) 326-6200 • Cable: STANRES, Menlo Park • TWX: 910-373-1246

TEACHING BASIC READING SKILLS IN SECONDARY SCHOOLS

A two-phase study of teaching basic reading skills in secondary schools has been funded by the National Institute of Education.* The purpose of the study in Phase I was to identify teaching processes that are efficient in helping secondary students learn to read. In Phase II of the study, the identified processes were translated into "teacher should" statements, and four inservice workshops were organized for secondary teachers, at which the prescriptions were presented and discussed.

Phase I

Phase I was designed to answer several questions regarding the relationship between student gain in reading and teaching processes in secondary classrooms. Several hypotheses were generated based upon prior research. To be tested were four empirical findings from the Follow Through Planned Variation study (Stallings and Kaskowitz, 1974):

- Teacher reinforcement for correct responses and guidance for incorrect responses are positively related to academic achievement. The value of feedback has been well documented in learning theory and in the Follow Through studies.
- The frequency of reading-related verbal interactions is positively related to student achievement in reading.
- The number of social interactions has a negative relationship with reading achievement.
- The student absence rate is related to the positive affect recorded in the classroom; i.e., the more supportive the environment, the lower the absence rate.

Sample

When the study was funded in mid-December, 43 teachers in 6 school districts volunteered to take part in Phase I of the study. Table 1 shows how these teachers and their students were distributed across sites and grade levels.

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*Contract NIE-G-77-000-1 with SRI International.

Table 1

PHASE I SAMPLE OF TEACHERS AND STUDENTS BY DISTRICT

District	Junior High		Senior High		Total	
	Students	Classes	Students	Classes	Students	Classes
Fresno	119	5	192	9	311	14
Monterey	44	3	--	-	44	3
Ravenswood	49	2	--	--	49	2
Salinas	181	7	72	3	253	10
Sequoia	--	-	54	4	54	4
Tulare City	194	10	--	-	194	10
Total	587	27	318	16	905	43

Instruments and Measurements

To describe the classroom processes, a classroom observation instrument was adapted and two student ratings were selected. Student outcomes were assessed by the CTBS reading achievement test and student absence data.

Observation Instrument

The SRI Secondary Observation Instrument (SOI) developed for this study with assistance from several secondary teachers is based upon previous observation systems developed at SRI. The SOI provides a gestalt of the classroom. On a "Snapshot" matrix, information is recorded regarding the materials being used, specific reading activities occurring, and grouping patterns at the time of the Snapshot. Following this description of the environment, the academic or social interactions between teachers and students are recorded on a Five Minute Interaction form.

Observers from each location were trained at SRI, Menlo Park, in an 8-day training session. All observers were required to pass a criterion coding test before collecting data. Each classroom in the sample was

observed for 3 days, with 5 Snapshots and 5 Five Minute Interactions per class period, for a total of 15 each.

The Classroom Environment Scale

The Classroom Environment Scale, Form R,* was selected to examine students' perceptions of the instructional process in the classroom. This particular scale was normed on a sample similar to the sample population. It yields nine subscales and can be completed in approximately 10 minutes. The subscale reports student perceptions of (1) involvement, (2) affiliation with others in the class, (3) receiving teacher support, (4) task orientation, (5) competition, (6) order and organization, (7) rule clarity, (8) teacher control, and (9) teacher innovation. Scores on the subscales range from 1 - 4.

In order to be certain that the results were not influenced by the students' skill in reading, each of 36 items on the scale was read aloud by the SRI data collector and the students checked the True and False column. The teacher was not present in the room at the time of the testing and students were assured that no one but SRI staff would see the ratings.

Student Rating of Instructors

This rating scale was developed in 1973 by the Sequoia High School district. Students are asked to rank their instructor on 16 variables on a scale of 1 to 5. On the basis of content, we developed four subscales: teacher professionalism†, the individual attention received, fairness, and enjoyment of class. This rating scale was also read to the students by the SRI data collector in the teacher's absence.

Comprehensive Test of Basic Skills (CTBS)**

The Comprehensive Test of Basic Skills (CTBS) is widely used in California junior and senior high schools. It has multiple forms and levels. Most schools involved in State-funded compensatory programs are required to give this test in the fall and in the spring. We used the scores from the school-administered test.

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*Moos, R. H., and E. J. Trickett, Classroom Environment Scale, Form R, Consulting Psychologist Press, Inc., Palo Alto, CA (1974).

†The components of professionalism were assumed to be "knows the subject matter, makes assignments that are clear and assigns meaningful work, and maintains order."

**Comprehensive Tests of Basic Skills, Forms Q, S, amd T, CTB/McGraw-Hill, Del Monte Research Park, Monterey, CA (1977)

Absence Rate

Absence data for the classes in the study were requested from each teacher. Classroom processes in the present study were expected to explain some of the variance in classroom absenteeism. The relationship between achievement in reading and absenteeism was also investigated.

Analysis and Results

Initially, we planned to perform only partial correlation and stepwise regression analyses for the sample, as had been done in the Follow Through Observation Evaluation, 1972-73 (Stallings and Kaskowitz, 1974). However, the data collected for the Basic Skills Study indicated that student pretest scores varied widely within classrooms (as much as from Grade 2 to Grade 13 equivalence). With such variations, teachers could be expected to use different classroom processes; that is, successfully instructing a class of students who tested at Grade 2, 3, or 4 might require different teaching techniques than instructing students who read at the Grade 6, 7, or 8 level. Partial correlations or stepwise regressions using the total sample were likely to mask interesting process/outcome relationships in subgroups of classrooms.

Therefore, we developed an analysis plan that emphasized the following steps:

(1) Partial correlations between classroom processes and student achievement (holding spring 1976 CTBS reading scores constant).

(2) Correlations between classroom processes and absence rate:

- o Partial correlations (holding spring 1976 CTBS reading scores constant).
- o Pearson product-moment correlations.

(3) Scatterplot of classes based on pretest/posttest scores to determine achievement subgroups within the total sample.

(4) Discriminant analysis to verify the utility of the achievement subgroups on the basis of differences in classroom processes.

(5) One-way analyses of variance and orthogonal contrasts on selected input variables to further examine intergroup differences.

(6) Teacher profiles with a description of each teacher's standing relative to the entire sample on selected variables.

Description of the Data Collected

Despite any researcher's efforts to create the best theoretical study plan, the realities of the experimental setting often require modification of that plan. This is especially true for those who attempt to study natural classrooms in real schools. During the Basic Skills study, several problems became apparent as the data were logged into the record.

As a criterion for being included in the study, we had asked that classrooms have students who were assigned to that class for the entire year. In 4 out of 43 classes, the students were reassigned at mid-semester. The plans of teachers and administrators do sometimes change at mid-year.

We also asked that all classes focus upon basic reading skills, expecting that all students would be deficient in reading skills. We found that the grade equivalent scores of students within some classes ranged from Grade 2 to Grade 13. Seven classrooms had some students scoring above the 49th percentile.

We relied upon test data collected at the schools and used spring 1976 and spring 1977 CTBS test scores for all districts, since those were the only two test points all districts had in common. We found that three different levels and four different forms of the CTBS had been used in the districts. The total reading raw score (for the CTBS for and level) were converted to the appropriate standard score.

One district had only spring 1976 or spring 1977 test data for their four classrooms. These could not be used in the analysis. One classroom with an enrollment of eight had pretest and posttest data for only one student. The decision rule was established that classrooms with fewer than one-third of the students with pretest and posttest data would not be included in the analysis. Using this criterion, only 36 of the 43 classrooms had sufficient test data to be included in the analysis that included process and test score data.

We did collect complete observation data for each of the 43 classrooms; i.e., a total of 3 class periods yielding 15 Snapshots and 15 Five Minute Interaction observations were available for each classroom. All 43 teachers completed the questionnaire. Absentee reports were obtained from 35 of the 43 teachers.

Partial Correlations between Reading Achievement and Observed Process Variables

To identify classroom processes that related to student achievement, we computed partial correlations, holding spring 1976 CTBS reading scores constant. A total of 116 variables developed from Snapshot and Five-Minute Interaction codes were selected by the principal investigator for use in the analysis. The observation and test data for 36 classrooms were included in this analysis. Table 2 identifies 29 observed process variables that were significantly correlated ($p > .10$) with achievement.

Two of the highest positive correlations with reading achievement are Snapshot process variables describing students reading aloud either to a teacher ($r = .40$) or to the whole group ($r = .59$). Two other variables with high positive correlations with reading are the teacher discussing the reading work ($r = .41$) and guiding students who say they do not know the correct answer by asking further questions ($r = .52$). All four of the above variables describe a classroom environment where the students are focusing on the task of learning to read.

Many of the negative correlations describe off-task behavior, the largest of which is social interactions ($r = -.52$). The more often students engage in social conversation the less often they are reading. All negative corrective feedback about social events to students for behavior or for reading also seems ineffective in helping students gain in reading ability.

The secondary observation instrument is based upon the observation instrument used in Follow Through, but the codes in the secondary instrument are more specifically related to reading. Although we cannot make direct comparisons between the two data sets, we can compare results of similar variables.

In the Follow Through Grade 3 observation study, we found a relationship between a relatively frequent use of workbooks or textbooks and reading achievement. Similarly, we find a correlation between reading in textbooks and workbooks and higher reading scores in the secondary school classroom.

Table 2

PARTIAL CORRELATIONS OF PROCESS VARIABLES
AND STUDENT READING ACHIEVEMENT*
(N = 36 Classrooms)

Variable Number	Description	r	p
Snapshot			
TBM2	Students read aloud with teacher from workbook	.40	.007
TDM7	Teacher instructs using chalkboard	.23	.08
TEM9	Teacher discusses the reading task	.41	.006
TLM2	Teacher grades papers	-.24	.07
IAM2	Students read silently from workbooks	.30	.04
IAM1	Students read aloud from texts to the class	.59	.001
IIM3	Students take tests or quizzes	.25	.09
IKM9	Social interactions	-.52	.001
IOM9	Student uninvolved	-.27	.07
FMI			
5	Adults—Interaction with individuals	-.25	.07
7	Adults—interaction with entire group	.23	.08
9	Student questions, or requests about reading	-.22	.10
44	Adult response to students' questions	-.21	.10
54	Student reading aloud	.24	.07
61	Adult instructs small group in reading	.21	.10
62	Adult instructs entire class in reading	.23	.08
76	Adult acknowledges student behavior	.25	.07
92	Adult gives negative corrective feedback for task or reading	-.21	.10
94	Adult gives negative corrective feedback for behavior	-.23	.08
105	Adults not interacting with students	-.23	.08
113	All classroom interactions related to student behavior	-.23	.08
116	All positive interactions	.24	.08
117	All negative interactions	-.29	.05
121	Students sent from classroom for disciplinary reasons	-.26	.07
126	Adults offer students a choice of activities	-.33	.02
131	Students say 'I don't know the answer'/adult probes student	.52	.001
136	Adult asks with student response to reading question unacceptable/adult asks another student	-.21	.10
160	Adult interaction with intruder	-.25	.07

*Spring 1976 CTBS reading scores were held constant.

The Follow Through data indicated that children prospered more when the teacher focused attention more frequently upon a large group or the total group rather than when the teacher worked with one student at a time. Working with a group or the total class was also more efficient at the secondary school level. This does not mean that working with individuals is poor practice. It does suggest that when the teacher spends a large amount of class time with one student, the other students may not receive the instruction or feedback they need. Thus, it is important to organize the classroom to provide instruction to the maximum number of students possible for the longest possible period of time.

In the Follow Through data, all of the variables that included positive or negative corrective feedback or praise for student responses in reading were positively correlated with achievement. The findings for the feedback variables in the secondary school study differ; negative corrective feedback has a negative relationship to reading achievement (Var. 92), while probing the student when he says, "I don't know," or adding some information has a positive relationship to reading achievement (Var. 131). Asking leading questions is a way to keep students involved and allow them to experience success. It is a positive way to finally elicit the correct response.

Interactions among students or teachers which are social in nature had a negative relationship to achievement in both the Follow Through elementary school data and the Basic Skills secondary school data. This does not imply that social conversations should not occur at all; it does mean they should not occur during reading class.

In summary, to achieve the most in reading, the Follow Through data and the Basic Skills secondary school data suggest that students should spend much of their time in class in reading workbooks and textbooks; that teachers should use positive feedback while working primarily with a group of students or the total group; and that social interaction during class time should be reduced.

Partial Correlations Between Reading Achievement and Student Rating Scales

We thought it would be of interest to see how the students' ratings of teachers would relate to student outcomes. At the secondary school level it seemed likely that students could provide useful information regarding classroom process by reporting their experience in the classroom: Was the teacher prepared? Were the rules clear? Did the teacher keep control of the class? Partial correlations (holding spring 1976 CTBS reading scores constant) were computed to examine the relationship between achievement and the student ratings.

The results of a partial correlation analysis between the Classroom Environment Scale (CES), Student Ratings of Instructors (SROI), and reading achievement, holding pretest CTBS scores constant, are shown on Table 3. All four of the SROI subscales are significantly correlated with achievement at $p. < .05$. Individual attention is the highest of all correlations ($r = .41$): the seven items of the subscale are rated on a scale of 1-5. The seven items reflect students' personal experience, for example:

- I find it hard to talk with teachers or easy to talk with this teacher;
- This teacher never listens to what I have to say or always listens to what I have to say;
- The teacher is not interested in me as an individual or is interested in me as an individual.

Four of the subscale correlations from the Classroom Environment Scale are significantly related to achievement at $p. < .10$. These correlations are all lower than those of the SROI. Since each scale has a range of scores of only 1-4, the variation between classrooms cannot be great; thus, the correlations are likely to be lower.

An intercorrelation of the subscales indicated that similar dimensions are being assessed by the two rating instruments. For example, individual attention on the SROI is correlated .75 with teacher support on the CES.

Overall, the findings suggest that students achieve more in reading within environments that they perceive to be supportive, where the teacher is professional and well organized, and where students are involved and task persistent.

Table 3

PARTIAL CORRELATIONS OF STUDENT RATING SCALES WITH READING ACHIEVEMENT*

Subscales	r	p	Scale Range
Student Rating of Instructors (N = 714 students, 36 classrooms)			
Professionalism	.35	.02	8-40
Individual attention	.41	.006	7-35
Fairness	.27	.05	1-5
Student enjoys class	.33	.02	1-5
Classroom Environment Scale (N = 718 students, 36 classrooms)			
Involvement	.27	.05	1-4
Affiliation	.12	.24	1-4
Teacher support	.26	.06	1-4
Task orientation	.26	.06	1-4
Competition	.06	.35	1-4
Order and organization	.25	.06	1-4
Rule clarity	.17	.16	1-4
Teacher control	.07	.35	1-4
Innovation	.18	.13	1-4

*Spring 1976 CTBS reading scores were held constant.

Absence Rate

The absence rate of junior and senior high school students is a national problem. The range of average absence rates for the 40 classrooms with absence data is from 6 to 35 days per student per year. The burden on the teacher is great when students are absent frequently.

Many reasons can be cited for absence from class: illness, work, caring for younger siblings, expelled from school, doctor appointments, other school activities, and staying away from class with friends. Students are not necessarily absent all day; they often go to some classes but not to others.

In the Follow Through Classroom Observation Evaluation 1972-73, we identified 65 process variables that accounted for 67% of the variance in absence rate in Grade 3 classrooms. In classrooms where the students had more choice of materials, activities, and work groups, and where they could ask questions and talk to each other a little more, they were absent less often.

Based upon this prior research, we wanted to see whether some classroom variables at the junior and senior high level could be related to student absence rate.

Pearson Product-Moment Correlation

Correlations were computed using all of the student rating subscales and selected classroom process variables with absence rate. Out of the 140 correlations, 14 were significant at $p < .05$. Variables whose relationship was significant at the $p < .05$ level are included on Table 4.

The subscale most related to low-absence rate is Affiliation. This suggests that students go to class more frequently when they feel the other students in the class are friendly, and easy to be with. This finding is interesting, but not surprising. Most people at any age prefer classes where they know and like the other students. The second subscale most related to low absence rate is Rule Clarity. This suggests that while teachers should discourage social conversations amont students, they should promote an environment where students are supportive to each other.

Table 4

CORRELATION OF ABSENCE RATE AND PROCESS VARIABLES
(N = 35 Classrooms)

Variable Number	Description	r	p
A	Affiliation	-.60	.001
RC	Rule clarity	-.34	.05
TEM9	Teacher discusses reading	-.34	.05
TLM9	Teacher manages classroom	-.36	.05
IAM8	Students use leisure reading books	+.34	.05
IGM5	Students do written assignments in reading kits	-.41	.01
10	Students ask teachers questions about the task	-.32	.05
77	All teacher's acknowledgment given to students' performance	-.32	.05
85	Teacher praises and acknowledges students for reading	-.38	.05
86	Teacher acknowledges student for reading and other tasks	-.33	.05
87	All praise and acknowledgment to students	-.36	.05
90	Guiding corrective feedback	-.35	.05
116	All positive interactions	-.32	.05
120	All warm supportive interactions	-.33	.05

These data suggest that in classrooms where teachers were warm and supportive (Var. 120) and acknowledged or praised students for achievement in reading or task-related work (Var. 77, 86 and 87) the students are absent less often. Variables 77 and 86 are a subset of Variable 87. In classrooms where the teacher spent time managing (Var. TLM9), held discussions (Var. TEM9), and made the rules clear (Var. RC), the students were absent less often.

Students were absent less often in classrooms where they more frequently felt the class was friendly (Var. A), asked questions about the task (Var. 10), and did written assignments from reading kits (Var. IGM5).

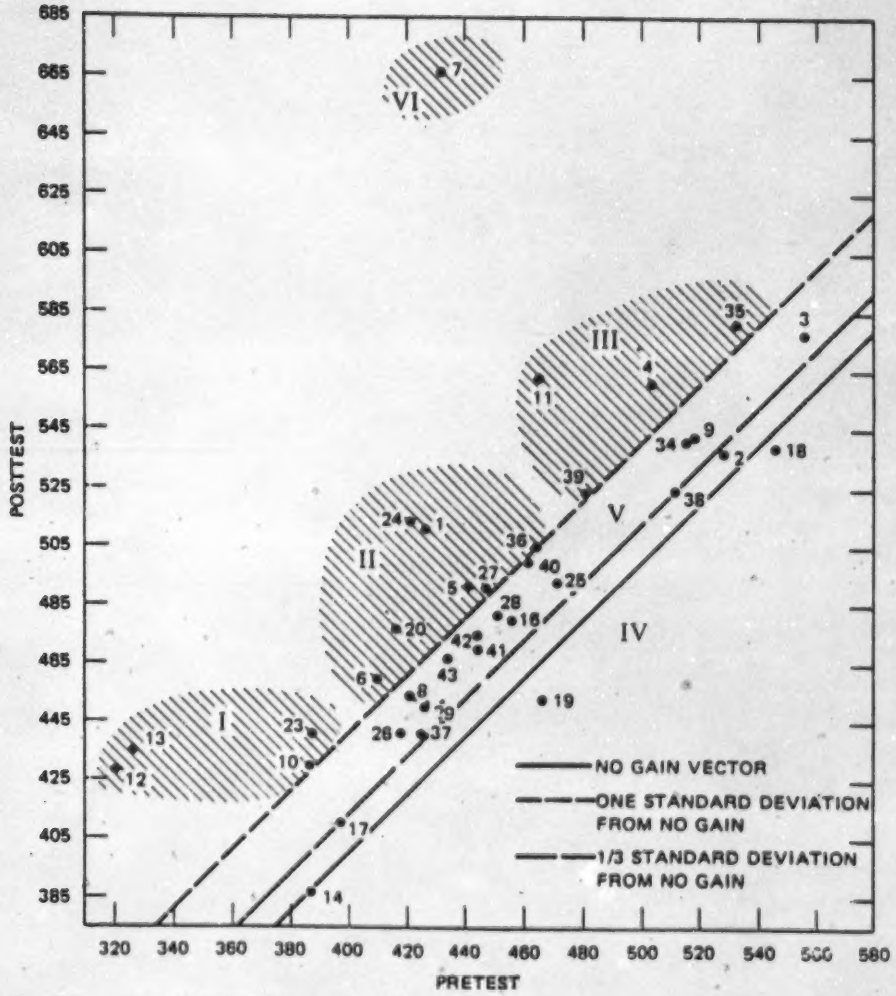
An unanticipated relationship was found between leisure reading and absence rate. Students came to class less frequently in classrooms where they more frequently engaged in leisure reading. It would seem more likely that students would enjoy leisure reading and be absent less frequently in such classrooms. However, a high level of leisure reading can reflect lack of teacher preparation and insufficient classroom structure. Also, leisure reading may relate to absence differently in subgroups of classrooms depending upon reading ability.

The process variables related to absence rate in the Basic Skills study are somewhat different than those found in Follow Through. In the Follow Through study, students were absent less often when they were in open class structures, that is, when they had more choice about activities and made more social comments to each other. In the Basic Skills study, the students were absent less often when they felt that other students were friendly, when the rules were clear, when they received positive reinforcement from teachers, and when they could ask questions about the reading tasks. Variables from both studies describe a warm, supportive environment.

Correlations should of course be interpreted with considerable caution. The intercorrelation of several variables can be expected to be very high. Absence rate will be more thoroughly studied in subgroups of classrooms.

Determination of Achievement Groups by Scattergram

The primary objective of the Basic Skills study is to examine the relationships between classroom processes and achievement in terms of defining those processes most relevant to producing high test score gains. In order to explore these relationships, "gain" must be tempered by the level of the pretest. That is, it was hypothesized that a classroom with a pretest-posttest difference of 50 units and an initial low test level would differ in instructional processes from a classroom with an identical gain but a high pretest level. Therefore, a scattergram plotting posttest score versus pretest score was created to attempt a clustering of classes on the basis of pretest level and amount of test score gain (see Figure 1).



Group I - Low Pretest/High Gain
Group II - Moderate Pretest/Moderate Gain
Group III - High Pretest/Moderate Gain
Group IV - No Gain
Group V - Slight Gain
Group VI - Case Study Classroom

FIGURE 1 SCATTERGRAM OF PRETEST AND POSTTEST — CTBS SCORES

Four classrooms without either pretest or posttest information were omitted from the analysis. Three additional classes with mean test scores based on fewer then one-third of the students were eliminated because of a concern over the lack of representativeness of the class means.

The determination of achievement groups required several steps. First, a "no-gain" line was defined (posttest - pretest = 0); that is, there was no difference between pre- and posttest score means. Second, as in other studies of this type (e.g., McDonald, 1976), the "gain" line was set at one-third of the standard deviation of the mean class gain scores (13 units) above the no-gain line. The no-gain group, then, becomes those classrooms with posttest-pretest differences falling between the one-third standard deviation gain line and the no-gain line. Third, test measurement error and the possibility of unstable classroom mean test scores (i.e., those classes with a small percentage of the total class having both pretest and posttest scores) make it impossible to classify some classrooms as either no-gain or gain. Given the probabilities of measurement error, why should one classroom with a gain of 12 units be classified as no-gain when another classroom with a gain of 18 units is allocated to a gain group? Therefore, "slight-gain group" was defined as those classrooms with posttest-pretest differences falling between one-third standard error (13 units) and one standard error (40 units). Fourth, the "gainers" were assigned to three groups on the basis of prescore levels: Group I, low pretest/high gain; Group II, moderate pretest/moderate gain; and Group III, high pretest/moderate gain (see Figure 1). Additionally an outlier was identified (gain of 234), which was treated as a special case study rather than arbitrarily forcing the class into an inappropriate group. The pretest/posttest scattergram resulted in the groups of classrooms shown in Table 5. A discriminant function analysis confirmed the groups defined in Figure 1.

District demographic characteristics such as amount of money spent per student did not explain why some classrooms gained and others did not. No one group was made up of classrooms all from the same district, and the two largest districts had some classrooms in each of the five achievement groups.

Table 5

DEMOGRAPHIC CHARACTERISTICS OF THE ACHIEVEMENT GROUPS

Group	Number of Classes	Number of Students		Heterogeneous Groupings		Days Absent		Pretest Scores (CTBS)		Post test Scores (CTBS)		Gain	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
I Low Pretest/ High Gain	4	26.50	2.08	Ø	Ø	13.77	4.39	354.43	35.65	433.12	5.80	78.69	33.74
II Moderate Pretest/ Moderate Gain	7	23.00	7.37	.03	.06	15.86	4.71	423.25	19.30	492.77	20.00	60.52	21.20
III High Pretest/ Moderage Gain	4	25.50	4.04	.36	.24	8.80	5.67	495.71	29.50	557.91	24.93	62.20	25.46
IV No Gain	7	22.29	4.07	.10	.12	10.19	6.44	465.26	64.83	470.63	63.16	5.37	11.14
V Slight Gain	13	19.69	8.11	.14	.14	11.71	5.51	462.78	42.69	490.66	40.57	27.88	5.26
VI Case Study Classroom	1	27.	--	.00	--	10.00	--	432.57	--	666.76	--	234.19	--

Analysis of Variance

In order to examine intergroup differences, one-way analyses of variance, using the same variables selected for the discriminant analyses, were conducted. Variables found to be significantly different at the .10 level were then chosen as discriminants of the four groups.

Because of the nature of a simultaneous comparison of the four groups in an analysis of variance, it was felt that some comparison between the no-gain group and the low pretest/high gain group, the moderate pretest/moderate gain group and the high pretest/moderate gain group might identify additional variables capable of explaining differences between the gain groups and the no-gain group. Accordingly, the mean scores of each group calculated during the analyses of variance were examined.

The demographic nature of the five groups identified in Figure 1 is described on Table 5. The case study has a gain of 234 points which clearly makes it an outlier. The no-gain group has an average of 22 students enrolled while the low pretest/high gain group had an average of 26 students. The case study class, which gained the most, had the most students enrolled (27). Thus, class size per se does not account for class gain* nor does absence rate explain the difference in gain. The no-gain group has an average absence of 10 days; two of the gain groups had higher absence rates; the case study with highest gain has an average of 10 days absence.

The group with the greatest test score change (Group I, low pretest/high gain) does not have heterogeneous classrooms, i.e., no students in these classrooms were performing above the 49th percentile on the pretest CTBS. Since the groups with homogeneous classes gained the most, this may be a factor in explaining the difference in gain scores.

Those teachers of students who entered class with low pretest scores and who made high gains in reading scores tended to quiz the students more frequently, have the students read aloud, work with small groups, and stay involved with the students.

*The number of classroom aides and the ratio of students to adults is not taken into account here.

Teachers of students who entered class with moderate pretest scores and who made moderate gains tended to use a direct teaching method in which they presented information, questioned specific students, got a response, and provided feedback. Positive feedback (praise, acknowledgment), probes, and guides were more efficient than negative feedback.

Teachers of students who entered with higher scores and made moderate gain used other subject matter as a vehicle for teaching reading. These higher achieving students could do more work on their own and teachers could afford to spend more time on management tasks than could teachers of students in the other two groups.

In classrooms where there was very little or no reading gain, the teachers tended to socialize more with the students, to grade papers in class more often, and to use negative corrective feedback for behavior.

Summary

The results of this study provide some interesting recommendations for teaching reading in the secondary schools. By separating the classes according to the pretest reading levels of students, the recommendations to teachers can be specific for the level of students they receive. Interesting contrasts were found in the classroom processes of the six subgroups that were identified according to the pretest scores and the gains they made.

Overall, we have learned as much from these analyses about what teachers ought not to do as we have about what they should do. For efficiency in teaching basic skills in reading, these findings suggest that teachers should:

- Have most interactions about reading
- Give instructions to the total group
- Ask questions of specific students (no volunteers)
- Provide positive feedback
- Control negative behavior
- Encourage positive behavior
- Use guides and probing questions when students do not know the answer

Teachers should not:

- o Grade papers during the class period
- o Socialize or allow students to socialize
- o Allow others to intrude and interrupt the class period
- o Allow negative behavior
- o Encourage humor during class time.

Many of the findings in this study are similar to those of other studies. The four hypotheses based upon previous research that were tested were supported:

- o A positive relationship was found between reading achievement and feedback given to students for their responses to the teacher's questions. In the classrooms that gained the most in reading achievement, teachers more frequently gave praise or acknowledgment for correct responses and gave a positive type of corrective feedback through guiding or probing questions.
- o The number of reading-related verbal interactions occurring in the classroom was positively associated with reading achievement.
- o The number of social interactions had a negative relationship with reading achievement.
- o A lower student absence rate was related to a positive, supportive classroom environment.

Some other findings from the study have policy implications. In particular, we refer to the practice of grouping students according to levels of achievement. In the past, many schools had well-defined "tracks" or "lanes." Once a student was assigned to the A, B, C, or D lane, the student usually stayed on that track for the entire school experience. Many educators and parents felt this practice was very restricting and demoralizing for the low achievers. To replace the program that assigned students to achievement lanes, many schools adopted a policy of grouping students so that some high, medium, and low achievers could be found in each class.

Theoretically, this sounds like a good practice, but in this study the classrooms that had students who were more like each other in reading achievement made more gain in reading. In heterogeneously grouped classrooms, the students who scores over the 49th percentile on the pretest made less gain then did students scoring below the 49th percentile on

the pretest. Students in heterogeneously grouped classrooms spent more time making social comments and humorous statements, and spent less time on reading. Thus, our findings suggest that for greater efficiency in teaching and learning reading skills, students should be placed in classes with students of similar reading ability. This does not imply that classes in other subjects such as social studies, music, art, or science should be grouped by ability. We recommend that the rules followed by schools in placing students should be flexible and appropriate to the subject matter to be learned.

Surprisingly, the student ratings of teachers proved to be a very useful tool in providing information on classroom process. The correlations with gain in reading scores were as high or higher than those of the observation process variables. The ratings indicated that students performed better in reading in classrooms where they received teacher support, where they perceived that the teacher was well-prepared and professional, and where they felt the teacher cared about them as individuals. Students were absent less often in classes where they said the rules were clear and the other students were friendly. We recommend using this type of instrument with this age group of students to better understand their classroom experience.

Phase II

Having identified several instructional processes that were efficient in teaching basic reading skills to secondary students, SRI staff proceeded to organize these findings into a series of inservice workshops.

Two additional school districts, San Jose and Tulare Union High School, requested to take part in the study. Thus, for Phase II, our sample of students and teachers increased (see Table 6).

Table 6

PHASE II SAMPLE OF TEACHERS AND STUDENTS BY DISTRICT

District	Junior High		Senior High		Total	
	Students	Classes	Students	Classes	Students	Classes
Fresno	46	2	125	7	171	9
Monterey	76	6	44	3	120	9
Ravenswood	62	3	--	-	62	3
Salinas	120	6	76	5	196	11
San Jose	70	3	51	4	121	7
Sequoia	--	-	13	1	13	1
Tulare City	90	5	--	-	90	5
Tulare Union	--	-	129	6	129	6
Total	464	25	438	26	902	51

The design was to test the students and observe the classrooms in the fall, winter, and spring. On the basis of fall test scores, teachers, by district and student achievement level, would be randomly placed in experimental or control groups. The winter observations would be conducted after the workshops to see whether the teachers were implementing the behaviors recommended in the workshops. In the spring, posttest data would be gathered to see whether students in the experimental teachers' classrooms gained more on the reading test than those in the control group.

The same instruments used in Phase I were used in Phase II, with one exception. A secondary comprehensive reading test was developed by SRI and substituted for the CTBS.

SRI Comprehensive Reading Test

For Phase I of the study, CTBS reading scores reported by each district were used as measures of reading achievement. However, use of data collected by the districts for state assessment necessitates waiting several months

for test results. Because we needed immediate scores to select a matched sample of teachers for the treatment and control groups of Phase II, we decided to administer a reading test to all students in the study in the fall of 1977 and the spring of 1978. It was necessary to select a wide-range reading comprehension test because the achievement of students in the study varies as much as eight grade levels. A published test that could be administered to such diverse groups within one class period could not be located. Therefore a reading test based on the California Achievement Test (CAT) was developed at SRI. The CAT consists of five test levels. Items were selected from each level of the vocabulary and reading comprehension subtests. At the lower levels, the content of the items was modified to be more appropriate to secondary school students.*

Data were collected in all 51 classrooms on the following instruments:

- Classroom Environment Scale
- Student Rating Scale of Instructors
- SRI Reading Test
- SRI Secondary Observation Instrument
- Teacher Questionnaire.

Assignment of Teachers to Groups

Based upon the fall student reading test data, teachers were assigned to either an experimental group to receive training immediately, or a control group to receive training after spring data collection. Two criteria guided the selection of teachers for the groups. We wanted some teachers in the control group and some in the experimental group in each district. We also wanted an equal distribution of classrooms in the experimental and control groups by level of the entering reading ability of the students in the class (i.e., class mean score low, medium, or high as defined in Phase I). Table 7 describes the assignment of teachers to groups by district.

Workshops

Workshops were scheduled to be held in Salinas, Monterey, Fresno, and Menlo Park. Teachers in each location could choose the time of day for the sessions. In all districts but Salinas, teachers chose afterschool hours

*We have since found these test scores to be correlated .98 with Fall 1977 CTBS reading scores.

Table 7

ASSIGNMENT OF TEACHERS TO TREATMENT AND CONTROL GROUPS

District/ School	Group I Low Pretest		Group II Medium Pretest		Group III High Pretest	
	Treatment	Control	Treatment	Control	Treatment	Control
District 1						
School 1	1	--	--	--	1	2
School 2	--	--	--	--	2	1
School 3	--	1	--	--	1	--
District 2						
School 1	--	--	--	--	1	--
School 2	1	--	--	--	--	1
School 3	1	1	1	--	--	--
School 4	1	1	--	1	--	--
District 3						
School 1	2	1	--	--	--	--
District 4						
School 1	--	--	1	1	--	1
School 2	1	1	1	1	1	1
School 3	--	--	1	1	--	--
District 5						
School 1	--	1	--	--	1	1
School 2	--	--	1	--	--	1
School 3	1	--	--	1	--	--
District 6						
School 1	--	--	1	--	--	--
District 7						
School 1	--	1	1	1	1	--
School 2	--	--	--	--	--	1
District 8						
School 1	1	--	1	1	--	--
School 2	--	1	--	1	1	--
Total number of classrooms	9	8	8	8	9	9

(from 4:00 to 6:00 p.m.). Teachers in Salinas were released for 2 hours time and the workshops were held from 12:30 to 2:30 p.m. The same two SRI staff members (Jane Stallings and Margaret Needels) conducted all sessions. Two sessions were conducted during the weeks of November 28 and December 5 and two were conducted during the weeks of January 9 and 16. The teachers in Tulare traveled to Fresno for the first two workshops. Since this appeared to be an unfair burden for these teachers, in January the trainers went to Tulare as well as Fresno for the sessions. Separation of the Fresno and Tulare teachers reduced the group size to five teachers in each session, which allowed each teacher more participation.

The first workshop was organized around the observed profile of behaviors of individual teachers and the test scores of the students in the class. The profiles were interpreted and recommendations for change in behavior were made on the basis of Phase I findings and in consideration of the students' levels of reading achievement. Many teachers had a wide range of student abilities in their class; therefore, they had to consider the recommended behaviors for more than one group. Each teacher received a packet of information with recommendations.

Because so many process variables studied in Phase I were negatively correlated with reading achievement, the second workshop provided specific recommendations for behavior management. Each teacher received a packet to read before the session. During the session, the leader asked what was the most difficult behavior problem teachers had had to handle the past week. In each of the separate sessions, the teachers eventually mentioned the same problems: tardiness, absenteeism, arguments, shouting out demeaning remarks and physical fights. The leaders asked how each teacher handled such situations. Some of these incidents were role played. Ways of handling such situations were suggested by the teachers and the trainers made recommendations based upon the data. Teachers role played some of these recommendations.

The third workshop offered specific suggestions for how to organize or structure the classroom. Since the students in many classrooms had a wide range of reading abilities, we recommended grouping according to reading disability for some of the reading activities. This recommendation

was difficult for teachers to execute since little information was available to them regarding the students' particular reading problems. We suggested that teachers try to understand why each student had failed to achieve in reading and to select an appropriate approach for remediation. Armed with little more information than the CTBS provides regarding grade equivalency, many teachers felt unable to follow this suggestion. Our recommendations for grouping were difficult to facilitate in classrooms where the number of students was large and the classrooms were small. Further recommendation for arranging the desks or tables for groups and placing assignments on the chalkboard before class begins were impossible for those teachers who rotated from classroom to classroom. If a teacher must race the children to the room, there is little time to move the furniture or write assignments on the chalkboard.

Techniques for motivating students toward good behavior and achievement were also discussed in the third session. The teachers found these recommendations easier to implement since they did not involve the rearrangement of furniture and students.

The fourth workshop synthesized the activities of the first three. It dealt with the direct approach to teaching. This method requires that teachers be in charge of their classrooms at all times, that they diagnose reading problems, select appropriate sequential materials, and provide frequent, supportive feedback. Since this methodology includes motivation techniques, we will incorporate the motivation section from Workshop 3 into this workshop.

For all workshop sessions, the SRI trainers made an effort to create an atmosphere that fostered uninhibited participation by the teachers. The workshops were well attended and the teachers expressed appreciation for the opportunity to discuss their problems freely and to receive specific suggestions for methods to improve their effectiveness in the classroom.

Some surprising findings came from the teachers during the workshops. They provided many anecdotal situations describing the problems they confront as reading teachers. Based upon their suggestions, we prepared

a survey of teacher training, teaching experience, room assignments, class size, and student ratio. We found that only 21% of the secondary teachers who have been assigned to teaching basic reading classes have been specifically trained to teach reading (see Table 8). Most were trained to teach music, arts, speech, psychology, physical education, typing, English, literature, drama, Spanish, theology, science, and career education (see Table 9). Of the 47 teachers responding to the survey, 34 continue to teach classes other than reading. Teaching experience varies from 1 year to 31 years. This is the first year of teaching reading for 11 teachers while 7 have been teaching reading 10 or more years. All the teachers in our sample assigned to teach reading are very willing but they feel inadequately prepared. Many seek additional training. Workshops for teaching reading have been attended by 53%, and 49% have taken some college courses. Teachers report that the reading workshops and courses they have taken vary in usefulness from excellent to a waste of time. There is a wide variety of programs being offered for inservice workshops, but few guidelines are available for districts or teachers to know what is needed to help teachers learn to teach reading at the secondary level.

A fundamental problem seems to be the absence of any program for diagnosing learning problems at the secondary level. Most elementary school children are screened for sight or hearing problems, or dyslexia and special programs are arranged for the children. If junior and senior high school students are still performing at a second, third, or fourth grade reading level, then some excellent information should be available that describes each student's difficulties in hearing, sight, or perception, as well as specific deficits in reading skills. However, secondary students are rarely tested. Limited school budgets have cut the time available for school psychologists or counselors to provide such services.

Most teachers report that the only student information they receive is the CTBS grade equivalence. Teachers rarely receive any other diagnostic information, nor have they been trained to administer diagnostic tests. Thus, students who have failed previously when using standard curricula often continue to fail using the same curricula. Diagnostic and prescriptive skills are badly needed by teachers.

Table 8

SUMMARY OF TRAINING AND EXPERIENCE
(n = 47 teachers)

Type of Training	Percent of Teachers
Specialty in teaching reading	21.3%
Attend workshops	53.2
Take college courses	48.9
Elementary credential	19.1
No formal training to teach reading	34.0
Also teach other subjects	72.3

Experience	Range
Total years teaching	1-31 years
Years teaching reading	1-12 years

Table 9

CREDENTIALS FOR TEACHING BY SUBJECT AREA

Credentialled Subject	No. of Teachers
Reading	10
Literature	5
Writing	3
Grammar	2
Language Arts	4
Speech	3
English	24
Spanish	2
Theology	1
Music	3
Drama	4
Art	3
Career education	1
Commerce	1
Business	1
Physical education	4
Aviation	1
Ethnic studies	1
Social studies	16
History	12
Political science	1
Psychology	2
Life science	2
Biological and physical sciences	2
Math	1
State requirements	1

Another problem teachers report is that many schools are organized so that teachers do not have their own rooms. Of the reading teachers, 49% share rooms, and 28% rotate from room to room (see Table 10). Several teachers report being in six different rooms during the day. This makes it very difficult to establish a reading environment where students can see their progress charted or where teachers can have appropriate reading or testing materials close at hand. In this situation, the teacher must place all of the materials on a cart and move from class to class. One teacher has to go down two flights of stairs with the cart.

Class size, although it was not found to be directly correlated with reading gain, affects the ability of the teacher to work with different groups of students while maintaining order. The two teachers who have ten or fewer low-reading-level students are more likely to meet the student/staff ratio in some cases, but of the 47 teachers responding to the survey, 20 do not have classroom aides. The ratio of students to adults ranges from 5/1 to 33/1.

Follow-Up Workshops

Observations were conducted again in February 1978 to see whether recommendations from the workshops were being followed. New profiles were prepared for each teacher in the form of transparencies, so that the winter profile could be laid over the fall profile to see whether the teacher's behavior had changed. Workshops based on these data are being conducted. The teachers are enthusiastic about this personalized feedback. At first glance, it seems that the experimental group of teachers have reduced the negative behavior in their classrooms and have increased the positive feedback. The amount of reading aloud has increased in classrooms with low-reading-ability students. These data will of course be more thoroughly analyzed and reported in the final Phase II report, which will include the data collected in Spring 1978.

Table 10

CLASSROOM ENVIRONMENT
(n = 47 teachers)

Description	Percent of Teachers
Have adequate room size	85.1%
Have no assigned room	28.0
Share a room	48.9
Have an aide present	57.4

	Average	Range
Class size	20	7 - 33
Ratio of students to adults	17:1	5:1 - 33:1

Summary and Recommendations

In Phase I, we examined the relationship of classroom processes to student gains in reading. We found several specific processes that were efficient in teaching students who were at different levels of reading. In Phase II analysis, we will repeat the analysis of Phase I and examine the relationship of several demographic variables to student gain. These variables are: training to teach reading; diagnostic information available; years of experience teaching reading; classroom size and assignment; and the ratio of students to teachers and aides.

Based upon our research findings and teacher reports, we suggest several rational corrective measures that could be taken by school districts to improve the morale of reading teachers and increase their efficiency in teaching basic reading skills to secondary students:

- Provide inservice training to help teachers learn to organize and manage reading classes. Working with several small groups of students at similar ability levels is more efficient than working with one student at a time.
- Provide information regarding efficient strategies to use the different levels of reading.
- Provide inservice training to assist teachers to cope with and change the disruptive behavior and low morale of students who have a long history of failure.
- Provide inservice training to diagnose learning problems and select appropriate reading materials. Handing a curriculum guide to teachers who are untrained in reading methods is not enough.
- Assign rooms so that reading teachers can have diagnostic and criterion test materials, and a wide range of high-interest reading materials available as needed.
- Arrange the size of remedial reading classes to be related to the severity of the reading difficulties. Teachers who have students functioning at a very low level should have fewer students.

If the findings from Phase I are replicated in Phase II and if the demographic variables suggested by teachers explain test score variance, then our recommendations will be based on reason and research. Needless to say, we await the next series of analyses with great anticipation.

SRI